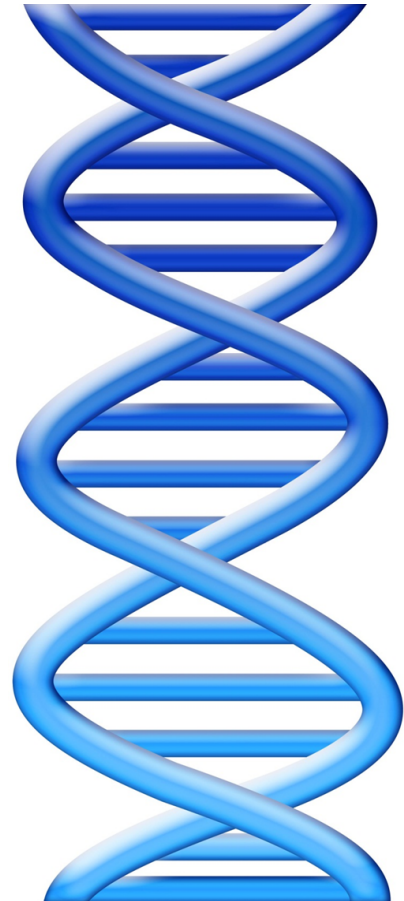
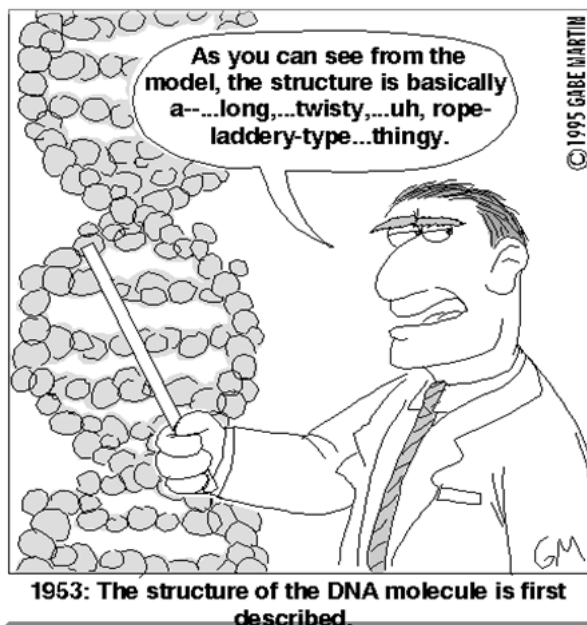
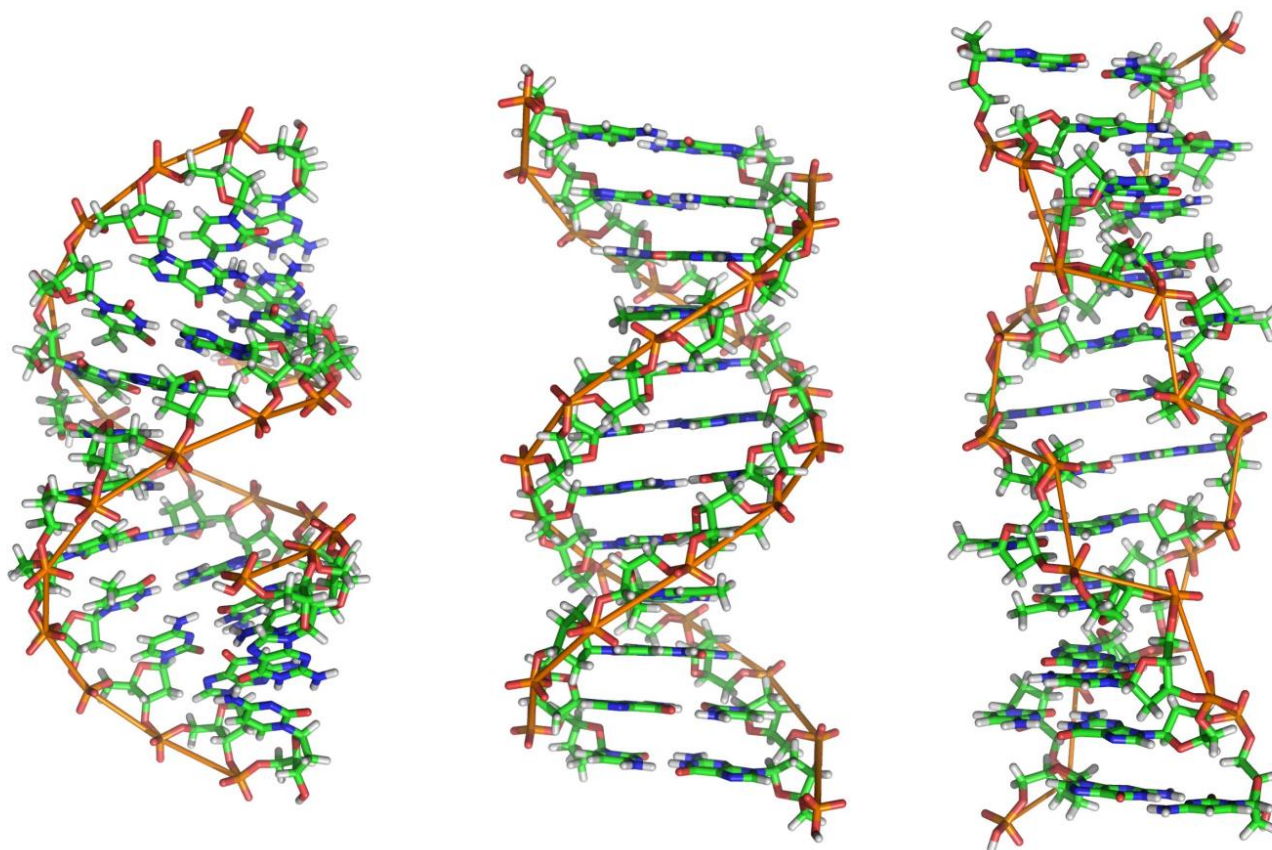


# DNA

## "The Blueprint of Life"





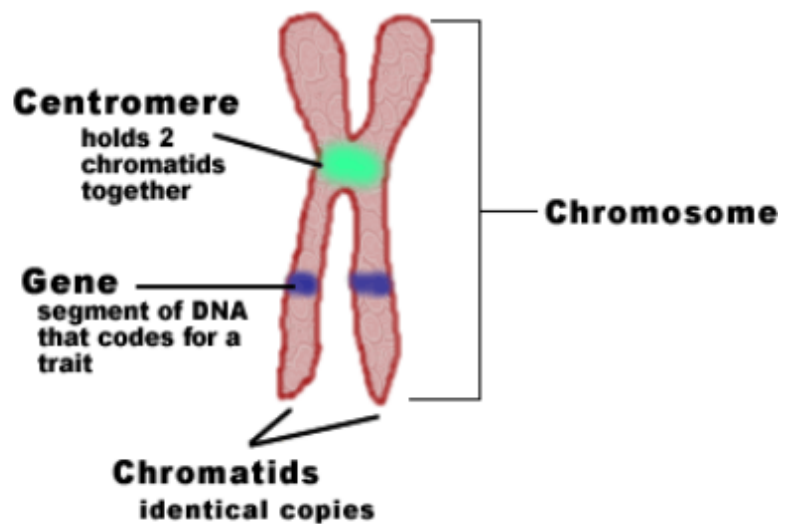
## Chromosomes/DNA/Genes

Chromosomes are made of DNA and protein

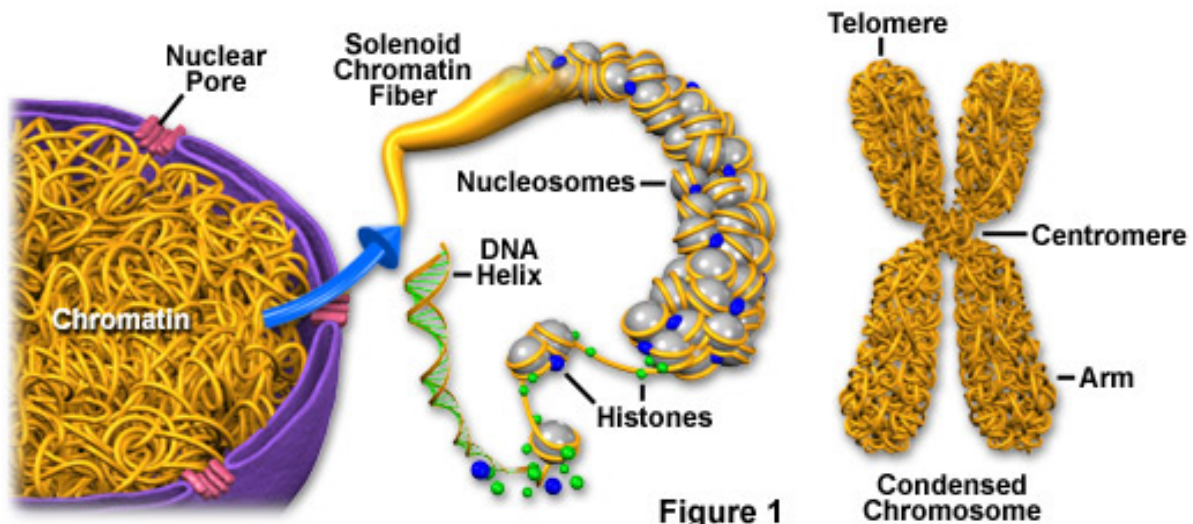
DNA are made of nucleotides

Sections of chromosomes are called genes

### Chromosome Structure

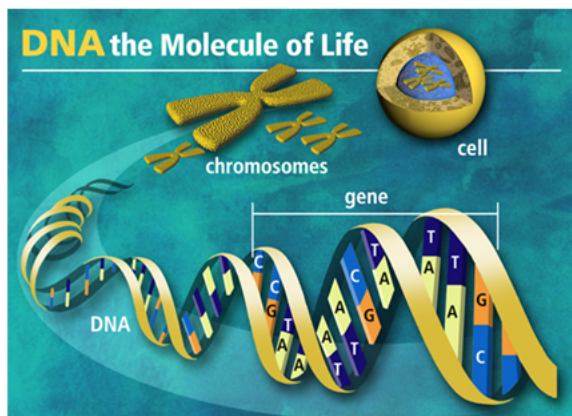


Chromatin and Condensed Chromosome Structure



DNA stands for...

DeoxyriboNucleic Acid



## DNA FACTS

- established by James Watson and Francis Crick



- Shape of a double helix



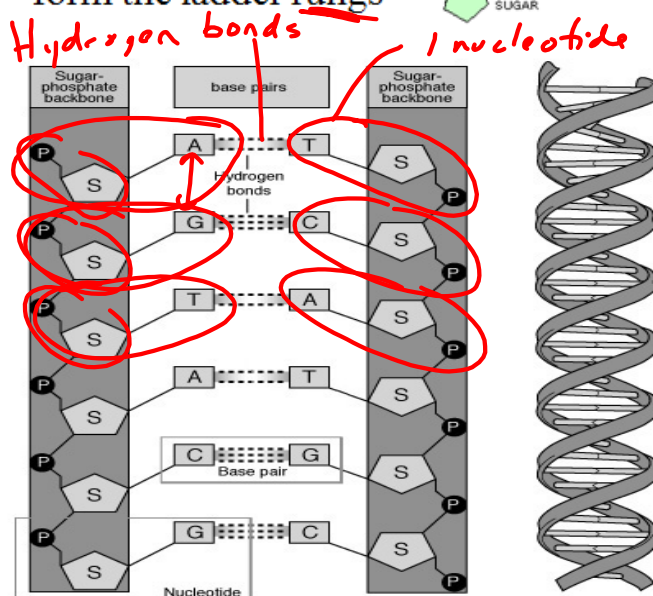


## The Structure of DNA

- made of repeating subunits called nucleotides
- a nucleotide consists of 3 parts:

a phosphate group  
a sugar (deoxyribose)  
a nitrogen base

- DNA is like a ladder
- Phosphate and ribose groups form the *rails* support
- Nitrogen base pairs form the ladder rungs



Base pairs are held together by hydrogen bonds

## Base Pair Rule

<sup>A</sup>  
Adenine ↔ Thymine<sup>T</sup>

Cytosine ↔ Guanine  
<sup>C</sup> <sup>G</sup>

"AT" RULE

Given the following bases, write the corresponding base

ATA  
| | |  
TAT

TCA  
| | |  
AGT

TGC  
| | |  
ACG

GGG  
| | |  
CCC

*1/2 of strand  
of DNA*

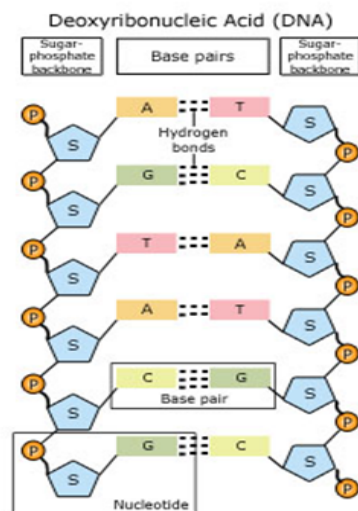


Image adapted from: National Human Genome Research Institute. Talking Glossary of Genetic Terms. Available at: [www.genome.gov/Pages/Hyperion/DIR/VIP/Glossary/Illustration/dna2.shtml](http://www.genome.gov/Pages/Hyperion/DIR/VIP/Glossary/Illustration/dna2.shtml).

the combination of A T C G determines the different traits that one exhibits

Think of the bases of DNA like letters.

Letters form words....

Words form sentences....

\*endless combinations



Write a 15 base sequence and have your neighbour write the corresponding bases.

\* Put a space after each group of 3 bases

Ex. A A C → G C A .....

Each group of 3 bases is known as a CODON

## Let's Review What We Know About DNA

1. DNA stands for: De \_\_\_\_\_ ribo \_\_\_\_\_ acid
2. What is the shape of DNA? \_\_\_\_\_
3. Who established the structure of DNA? \_\_\_\_\_
4. Adenine always pairs with \_\_\_\_\_
5. The sides of the DNA ladder are deoxyribose and \_\_\_\_\_
6. Guanine always pairs with \_\_\_\_\_
7. What is the complimentary sequence: A A T G C A
8. The two sides of DNA are held together by \_\_\_\_\_ bonds.
9. DNA is composed of repeating subunits called \_\_\_\_\_
10. What are the 4 bases that make up the rungs of the DNA ladder? \_\_\_\_\_
11. What is a codon?

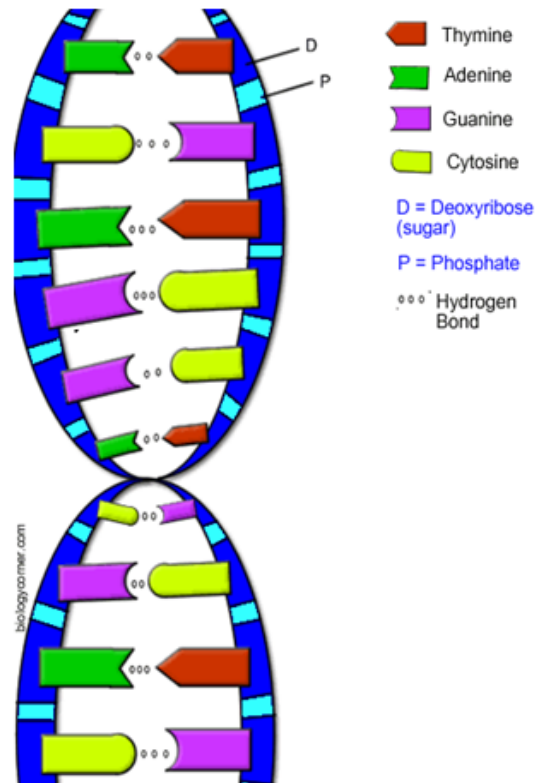
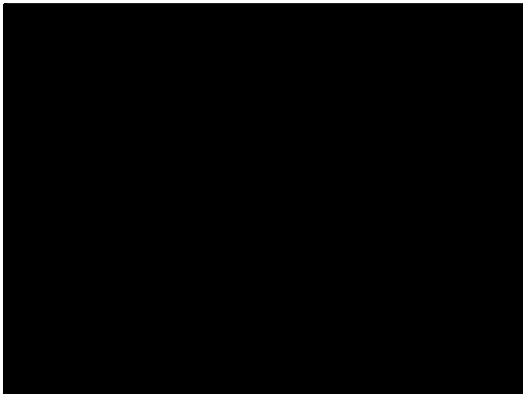
<https://www.youtube.com/watch?v=5MQdXjRPHmQ#t=264>



## Base-Pair Rule

Adenine  $\leftrightarrow$  Thymine

Guanine  $\leftrightarrow$  Cytosine



\* remember A's always connect with T's = "AT"

## Base Pair Rule

One side: A T A T C A T G C G G G

Other side: